

MAGNESITE



Indian Minerals Yearbook 2015

(Part- III : Mineral Reviews)

54th Edition

MAGNESITE

(FINAL RELEASE)

**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES**

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33 Magnesite

Magnesite ($MgCO_3$) is a carbonate of magnesium. It is usually found as irregular veins as an alteration product of serpentine ultramafic rocks and other magnesium rich rock types and formed by replacement of dolomite and dolomitic limestone. Calcium and silica are, therefore, the most common impurities found in magnesite along with Fe_2O_3 and Al_2O_3 . It is a very important mineral for the manufacture of basic refractories, which could be largely used in the steel industry. In commerce, the term 'magnesite' refers not only to the mineral, but also to many products, obtained by calcining the natural carbonate; e.g., caustic magnesite (magnesia obtained by calcining crude magnesite at comparatively low temperatures, 700 to 1,000°C, and retaining 2 to 7% CO_2 as carbonate) and dead-burnt or refractory magnesite (magnesia obtained by calcining magnesite at high temperatures, 1,500 to 1,800°C, usually containing less than 0.5% CO_2). Pure magnesite calcined at still higher temperatures (1,600 - 1,800°C) to expel carbon dioxide completely is termed as 'periclase' (MgO) in the trade.

RESOURCES

The total reserves/resources of magnesite as per UNFC system as on 1.4.2013 are about 328 million tonnes of which reserves and remaining resources are 21 million tonnes and 307 million tonnes, respectively. Substantial quantities of resources are established in Uttarakhand (71%), followed by Rajasthan (16%) and Tamil Nadu (10%). Resources are also located in Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir, Karnataka and Kerala.

Occurrences of magnesite in Tamil Nadu are low in lime and high in silica, whereas those of Uttarakhand are high in lime and low in silica. The gradewise and statewise reserves and resources of magnesite are given in Table - 1.

EXPLORATION & DEVELOPMENT

No exploration work has been carried out during the year.

PRODUCTION, STOCKS & PRICES

Production of magnesite in 2014-15 at 276 thousand tonnes increased by 40% as compared to that in the previous year. There were 16 reporting mines in 2014-15 as against 14 in the previous year. Five principal producers accounted for 81% of the total output during the year 2014-15. About 60% of the total production of magnesite was contributed by public sector during 2014-15 as against 62% in the preceding year.

Tamil Nadu continued to be the major producing state with maximum share of 78% in total output during 2014-15 followed by Uttarakhand (19%) and the remaining 3% was contributed by Karnataka.

Mine-head closing stocks for the year 2014-15 were 61 thousand tonnes as against 63 thousand tonnes in the previous year.

The average daily employment of labour during the year was 903 as against 818 in the previous year (Tables -2 to 5).

The prices of magnesite are furnished in the General Review on 'Prices'.

**Table – 1 : Reserves/Resources of Magnesite as on 1.4.2013
(By Grades/States)**

(In '000 tonnes)

	Reserves			Remaining Resources					Total Resources (A+B)		
	Proved STD111	Probable		Feasibility STD211	Pre-feasibility STD221	Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	
		STD121	STD122								Total (A)
All India : Total	13455	1837	5481	3987	7384	43905	59652	133356	45	307339	328112
By Grades											
High Grade	2616	-	2	601	-	1	2	26	-	631	3249
Medium Grade	7429	1433	5415	2121	4518	10003	64	9730	-	26545	40822
Beneficial/Low	2024	147	53	-	523	418	648	117216	-	150365	152588
High & Medium Mixed	-	-	-	99	173	2152	-	192	-	2616	2616
Medium & Low Mixed	1239	257	-	-	429	29237	58271	414	-	116117	117613
Others	148	-	2	1166	1698	2087	24	2525	-	7500	7650
Unclassified	-	-	-	-	-	-	-	83	-	83	83
Not-known	-	-	8	-	43	7	-	3170	45	3482	3491
By States											
Andhra Pradesh	-	-	-	-	-	-	-	80	-	80	80
Himachal Pradesh	-	-	-	-	-	-	-	298	-	298	298
Jammu & Kashmir	2610	740	-	600	100	-	-	150	45	895	4245
Karnataka	755	147	55	100	190	234	88	2836	-	3458	4415
Kerala	-	-	-	-	-	-	2	38	-	40	40
Rajasthan	6	-	2	906	1589	2118	-	49033	-	53796	53804
Tamil Nadu	5797	132	1791	2219	4808	10276	17	7441	-	25498	33218
Uttarakhand	4287	818	3632	162	697	31277	58902	73481	-	223274	232011

Figures rounded off.

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Table – 2 : Principal Producers of Magnesite, 2014-15

Name & address of producer	Location of mine	
	State	District
Tamil Nadu Magnesite Ltd, (TANMAG) 5/53, Omalur Main Road, Jagir Ammapalayam, Distt. Salem - 636 302, Tamil Nadu	Tamil Nadu	Salem
Almora Magnesite Ltd, At Matela, P.O. Billori, Distt. Bageshwar, Uttarakhand	Uttarakhand	Bageshwar
S. Sunder Rajan, Gorimedu Perigolapatti, Post-Kannankurchi, Salem-636 008 Tamil Nadu	Tamil Nadu	Salem
N.B.Minerals Corporation Opp. Bhatt Colony, Nawabi Road, Haldwani, Distt. Nainital-263 139 Uttarakhand	Uttarakhand	Pithoragarh
India Magnesite Products Ltd, 3rd Floor, Balaji Towers, 11/239, Ramkrishna Road, Distt. Salem-636007 Tamil Nadu	Tamil Nadu	Salem

Table – 3 : Production of Magnesite, 2012-13 to 2014-15
(By States)

(Qty in tonnes; Value in ₹'000)

State	2012-13		2013-14		2014-15 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	224315	459178	196940	445622	275678	668139
Karnataka	11495	40937	7720	29371	9129	38955
Tamil Nadu	160450	339026	144991	363289	215254	562329
Uttarakhand	52370	79215	44229	52962	51295	66855

Table – 4 : Production of Magnesite, 2013-14 and 2014-15
(By Sectors/States/Districts)

(Qty in tonnes; Value in ₹'000)

State/District	2013-14			2014-15 (P)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
India	14	196940	445622	16	275678	668139
Public Sector	4	121609	273829	4	164567	349000
Private Sector	10	75331	171793	12	111111	319039
Karnataka	3	7720	29371	3	9129	38955
Mysuru	3	7720	29371	3	9129	38955
Tamil Nadu	9	144991	363289	11	215254	562329
Erode	2	654	1236	2	466	1010
Karur	2	7650	6799	2	8843	7698
Namakkal	1	5423	7050	1	7750	10884
Salem	4	131264	348204	6	198195	542737
Uttarakhand	2	44229	52962	2	51295	66855
Bageshwar	1	30155	36397	1	33309	44905
Pithoragarh	1	14074	16565	1	17986	21950

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**Table – 5 : Mine-head Stocks of Magnesite
2013-14 & 2014-15
(By States)**

State	2013-14	2014-15 (P)
India	63248	60529
Karnataka	3007	4745
Rajasthan	-	30
Tamil Nadu	59855	55734
Uttarakhand	386	20

MINING AND MARKETING

Magnesite is being worked by opencast method by developing benches. In Salem area (Tamil Nadu), magnesite is found chiefly as encrustations, veins and stringers in ultra basic rocks like dunite and peridotite. Stringers and veins occur irregularly in fractures of rocks giving rise to different patterns. Veins are broken and magnesite is sorted out manually. Major magnesite producing mines in Salem area belong to Tamil Nadu Magnesite Ltd (TANMAG a State Government Undertaking), Dalmia Magnesite Corporation (a Private Sector Enterprise) and SAIL Refractory Co. Ltd (a Central Government Undertaking). These mines are semi-mechanised as well as mechanised, and uses compressors, wagon drills, jackhammers, power shovels, loaders, dumpers, dozers and pumps. Normally, Ammonium Nitrate Fuel Oil Mixture (ANFO) with high explosives as booster is used for blasting. The powder factor may go up to 10. The blasted rock or run-of-mine material containing 25 to 30% magnesite is subjected to manual sorting.

The hand-picked crude magnesite is further subjected to sorting and dressing in the dressing yard. Magnesite lumps which are not considered fit for dressing (containing 10 to 20% silica) constitute 2 to 6% of the run-of-mine. These lumps are hand-picked and stacked separately as rejects. The remaining material is further dressed to obtain usable magnesite containing less than 3% silica. The usable magnesite hardly constitutes 4 to 8%

of blasted rocks even though run-of-mine contains 20 to 30% magnesite. In Uttarakhand, Almora Magnesite Ltd and N.B. Minerals Corporation are the important producers having mines in Bageshwar and Nainital districts, respectively.

Magnesite is marketed generally after calcination; that is, after converting it into lightly calcined or caustic magnesite by heating the mineral to 800 to 1,000°C and dead-burnt variety to 1,800°C.

At TANMAG, the recovery of magnesite from blasted earth is one in fourteen. After picking the magnesite, the remaining reject material is removed by mechanical operation using HEMM. TANMAG's crude magnesite production capacity is in the range of 75,000 to 100,000 tonnes.

USES AND SPECIFICATIONS

The major proportion (about 98%) of magnesite mined is used for conversion into calcined form which finds many applications. The other industries where raw magnesite is used are mosaic tiles, electrodes, chemicals and manufacture of magnesium metal. Magnesite is also used in fertilizers and by food processing industry. Raw magnesite is dead-burnt for making basic refractory bricks, basic refractory mortars, ramming mass, tar/pitch impregnated magnesite, magnesia-carbon bricks, slide-gate plates and other refractories. Caustic calcined magnesite is used in manufacturing sorel cement (magnesium oxychloride), castable refractories and extraction of magnesium metal. It is also the source material for manufacture of magnesium compounds like magnesium sulphate (Epsom salt) and other salts used in paper and pharmaceutical industries. In paper industry, magnesium bisulphate produced from magnesite was used as cooking liquor for preparing pulp. It is also used in textile, rubber, glass, ceramic industries and as animal feed stuff. Fused magnesia finds application as insulating material in tubular heating elements in electrical industry and refractory brick linings in steel furnaces.

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Refractory Industry

In India, about 90% consumption is accounted by refractory industry. In the manufacture of refractories, deleterious constituents are SiO₂, CaO, Fe₂O₃ and Al₂O₃. The permissible limits for these constituents are governed by its end-use. The refractory bricks are made from dead-burnt magnesite by judicious blending of different types of raw magnesite before dead-burning or of different qualities of dead-burnt magnesite prior to brick making.

Indian steel plants use domestic dead-burnt magnesite (DBM) bricks containing up to 5% silica and 2.5% maximum CaO. By and large, Indian refractory makers prefer magnesite for making high grade DBM containing MgO 45.5% (min), SiO₂ 2.5% (max) and CaO 1.5% (max).

The BIS has prescribed the IS specification (14303-1995, Reaffirmed 2011) for magnesite in refractory industry use. The said specification has laid down five grades of magnesite as follows:

S. No.	Constituent	Requirements, Percent				
		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
i)	MgO min	45.00	43.00	42.50	45.00	43.00
ii)	CaO max	0.75	0.75	0.75	2.00	2.00
iii)	Al ₂ O ₃ max	0.50	0.50	0.50	0.50	0.50
iv)	Fe ₂ O ₃ max	0.50	0.50	0.50	2.50	2.00
v)	SiO ₂ max	2.00	3.00	4.00	1.00	2.00
vi)	Size*	25-75 mm	25-75 mm	25-75 mm	50-100 mm	50-100 mm

* Unless and otherwise agreed to.

Chemical Industry

The BIS specification (IS : 3607-1979, First Revision, Reaffirmed 2010) has prescribed the following specifications for magnesite in chemical industry use:

S.No.	Characteristic	Requirement
i)	Loss on ignition, percent by mass, min	48.0
ii)	Silica (as SiO ₂), percent by mass, max	2.0
iii)	Alumina (as Al ₂ O ₃), percent by mass, max	0.3
iv)	Iron Oxide (Fe ₂ O ₃), percent by mass, max	0.4
v)	Magnesium (as MgO), percent by mass, min	45.0
vi)	Calcium (as CaO), percent by mass, max	1.0

CONSUMPTION

About 74% consumption was reported for calcination purposes followed by 16% by refractory purposes (including iron and steel plants). Chemical industry consumed magnesite for producing magnesium sulphate. Magnesite consumption pattern by industries is shown in Table - 6.

**Table – 6 : Consumption* of Magnesite¹
2012-13 to 2014-15
(By Industries)**

Industry	(In tonnes)		
	2012-13	2013-14(P)	2014-15(E)
All Industries	490100	342600	364600
Calcination	367300(9)	251600(9)	270900(9)
Chemicals	++(2)	2300(2)	2300(2)
Ferro-alloys	8600(11)	7200(11)	9900(11)
Foundry	1000(5)	1000(5)	1000(5)
Iron & Steel	20200(7)	20200(7)	20200(7)
Paper	1800(1)	1800(1)	1800(1)
Refractories ²	90800(9)	58100(9)	58100(9)
Others	400(8)	400(8)	400(9)

Figures in parentheses denote the number of units in organised sector.

* Paucity of data, hence coverage may not be completed.

1/ : Includes consumption of imported magnesite and magnesite equivalent to dead-burnt magnesite.

2/ : Besides, imported sea water magnesia which was 5,000 tonnes during 2012-13, 2013-14 and 2014-15 were consumed in refractory industries.

INDUSTRY

Dead-burnt Magnesite (DBM)

When the raw magnesite is calcined between 1,660-1,800°C in the rotary kiln, carbon dioxide is expelled completely and a dense product 'dead-burnt magnesite' is obtained. Dead-burnt magnesite refers to the magnesite that is chemically unreactive, namely 'dead' because it has been calcined at a temperature high enough to enable it to be used in brick making or monolithic hearths without undue difficulty arising out of hydration or shrinkage.

Caustic/Calcined Magnesia

Low calcined magnesite, also known as caustic/calcined magnesia, is obtained by calcining magnesite in a shaft or rotary kiln at a temperature up to 1,800°C. Because of incomplete dissociation, it still contains 8 to 10% carbon dioxide as carbonate. Low calcined magnesia when mixed with water forms a feebly plastic paste. Industries like paper, rubber, ceramic, asbestos products, glass, etc. use caustic magnesia.

Fused Magnesia

Fused magnesia is produced by the fusion of the high-grade magnesite in Higgin's or electric arc tilt furnaces between 2,500 and 3,000°C. It is resistant to the action of molten metals, basic slags and fluxes and high temperatures. It is used in the form of moulded vessels and as compressed material for covering resistant elements of the furnaces used in the melting of lead, tin, etc.

There were 14 major plants manufacturing dead-burnt magnesite and seven plants producing lightly-calcined magnesite, two magnesium metal extracting plants and one pilot plant (Table - 7). By-product magnesium carbonate and other magnesium salts were also produced during salt manufacture from sea water. Tamil Nadu Magnesite Ltd is one of the largest producers, producing DBM in a rotary kiln, sintered at 1,750°C. In addition, it has five oil fired vertical shaft kilns which heat magnesite to 1,000-1,100°C for caustic calcined grades.

Table - 7 : Manufacturing Plants of Dead-Burnt Magnesite (DBM), Low Calcined Magnesite, etc.

Name of the plant	Location	Installed capacity (tpy)
Tamil Nadu Magnesite Ltd	Salem, Tamil Nadu	30000 (DBM) 19500 (calcined magnesite)
Ramakrishna Magnesite Mines	-do-	3000 (calcined magnesite)
SAIL Refractory Co. Ltd (Formerly Burn Standard Co.Ltd)	-do-	54000 (DBM) 18000 (Calcined magnesite)
Dalmia Magnesite Corporation	-do-	72,000 (DBM)
Sri Ponkumar Magnesite Ltd	-do-	26500 (DBM)
Orissa Industries Ltd	Barang, Sundergarh, Odisha	5000 (DBM)
Almora Magnesite Ltd	Haldwani, Bageshwar, Uttarakhand	30000 (DBM, calcined, semicalcined magnesite)
Magnesite & Minerals Ltd	Pithoragarh, Uttarakhand	45000 (DBM)
Himalayan Magnesite Ltd	-do-	20000 (DBM) 3000 (calcined magnesite)
J&K Minerals Ltd	Chipprian, Panthal, Udhampur, Jammu & Kashmir	30000 (DBM) 75000 (sized magnesite)
Hansaflon Plastochem Ltd	NA	1500 (Fused magnesia)

Sea Water Magnesia (SWM)

Sea water or lake bitterns is an alternative source to obtain magnesia by chemical reaction. The main raw materials required other than sea water are dolomite or limestone, fresh water and sulphuric acid. The magnesia content of sea water is about 0.2%, and even by enrichment with dolomite, around 300 kilograms sea water need to be processed to obtain a kilogram of magnesia. The sea water magnesia can be used to manufacture dead-burnt magnesite, caustic magnesia and the magnesium compounds.

Marine By-products

Carbonates, chlorides and sulphates of magnesium are obtained as by-products in the production of common salt by solar evaporation. Salt Commissioner, Jaipur, reported 16,336 tonnes production of magnesium chloride and 37 tonnes of by-product magnesium sulphate in 2011-12. The production is normally reported from the salt pans in Jamnagar-Gandhidham, Gujarat.

Magnesium Metal

The chief use of magnesium metal is as an alloying agent to make aluminium-magnesium alloys. Since magnesium is less dense than aluminium, these alloys are prized for their relative lightness & strength. The second application field of magnesium is electronic devices. India imports substantial quantities of magnesium metals. Aluminium industries and other speciality metal alloys manufacturers are major consumers of magnesium metal. Defence equipment and nuclear reactor materials also consume magnesium. There is a scope for taking up manufacture of this metal.

Current demand of magnesium in India is estimated to be about 1000 tonnes per annum of which 60% accounts for aluminium alloy, 25% for aerospace & defence sector and balance for casting & miscellaneous industries.

TRADE POLICY

As per the Foreign Trade Policy (FTP) 2009-2014, as amended and effective from 05.6.2012, exports and imports of all grades and varieties of magnesite under heading no. 2519 are allowed freely.

WORLD REVIEW

The world reserves of magnesite were 2,400 million tonnes in terms of magnesium content, excluding large resources of magnesium-bearing substitutes, such as, dolomite, brucite and olivine. Further, magnesium compounds could be recovered economically from well and lake brines and from sea water. The latter, which contains 0.13% magnesium by weight, was a major source of metal and compounds. The world reserves of magnesite is given in Table - 8.

The world production of magnesite was at 47.7 million tonnes in 2014. China continued to be the leading producer, accounting for about 78% production, followed by Russia & Turkey (5% each). The world production of magnesite is given in Table-9. The largest capacity magnesite processing facilities in the world are in China and Russia. These countries accounted for about two-third of world magnesia from magnesite production capacity.

Worldwide, over 98% raw ore producers convert it to magnesia for commercial application, mainly in refractory industry (75%) based on both the sintered and fused forms generally called DBM and electrofused magnesia (EFM), respectively, for lining furnaces used in steel production, non-ferrous metals, cement, glass, ceramic and petrochemicals. Primary producers of magnesium metal and alloys were China, USA and Russia. The consuming market segments are aluminium alloying, die-casting and desulphurisation.

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Brazil

Ibar Nordeste S.A. at its Brumado plant has the capacity of 160,000 tonnes/year to produce caustic-calcined magnesia.

Norway

Based on sea water RHI, Norway, has the capacity of 85,000 tonnes/year to produce fused magnesia in Porsgrunn.

Russia

Magnezit Group, Moscow, has capacity of 80,000 tonnes/year high temperature shaft kiln to process briquetted calcined magnesia at its plant in Satka, Chelyabinsk and construction of furnace of 100,000 tonnes/year to produce dead-burned magnesite is under progress. Apart from this, five furnaces with capacity of 10,000 tonnes/year each to produce fused magnesia were installed at the Satka plant.

The company has initiated to enhance its capacities at Razdolinsk plant to produce caustic-calcined magnesia from 50,000 tonnes/year to 200,000 tonnes/year and fused magnesia from 50,000 tonnes/year to 150,000 tonnes/year.

Spain

Magnesitas Navarras S.A, Navarra was producing magnesite from its mine at Borobia and Zibeti deposits. The total reserves of these deposits are of the order of 57 million tonnes.

Turkey

Kumas Manyezit Sanyi A.S., Kutahya has the capacities of caustic-calcined magnesia of 265,000 tonnes/year and fused magnesia of 350,000 tonnes/year.

RHI purchased a magnesite mine and adjacent processing facilities in Erzurum from Cihan Group. RHI is reopening the mine and modernising the plant also. Expansion of its sintered magnesia capacity from 60,000 tonnes/year to 100,000 tonnes/year is under progress.

Nepal

The Nepalese government began activity seeking foreign investors to re-open magnesia production at Nepal Orind Magnesite's plant in Dolakha district, with a capacity of 65,000 tonnes per year.

**Table – 8 : World Reserves of Magnesite
(By Principal Countries)**

(In '000 tonnes of magnesium content)

Country	Reserves
World : Total (rounded)	2,400,000
Australia	95000
Austria	15000
Brazil	86000
China	500000
Greece	80000
India*	26000
Korea, Dem. P.R.	450000
Russia	650000
Slovakia	35000
Spain	10000
Turkey	111000
USA	10000
Other countries	390000

Source: Mineral Commodity Summaries, 2016.

**As Per UNFC System, as on 1.4.2010, the total resources of magnesite in India are estimated at 335 million tonnes.*

**Table-9 : World Production of Magnesite
(By Principal Countries)**

(In '000 tonnes)

Country	2012	2013	2014
World : Total	45191	47267	47690
Australia	614	522	612
Austria	779	714	754
Brazil	479	557	550 ^e
China ^e	35000	37000	37000
Greece	350	315	391
India*	224	195	305
Iran	170 ^e	181	185 ^e
Korea, Dem. P. R. ^e	178	180	180
Netherlands	291	250	286
Russia ^e	2600	2600	2600
Saudi Arabia	254	235	286
Slovakia	618	584	557
Spain	650	836	840
Turkey	2476	2597	2600 ^e
Other countries	508	501	544

Source: World Mineral Production, 2010-2014.

** India's production of magnesite in 2012-13, 2013-14 and 2014-15 was 224 thousand tonnes, 197 thousand tonnes and 276 thousand tonnes, respectively.*

FOREIGN TRADE

Exports

The exports of magnesite increased marginally to 6,612 tonnes in 2014-15 from 6,118 tonnes in the previous year. Exports were mainly to Malaysia (24%), UAE (22%) and Netherlands, Bangladesh & Thailand (8% each). Out of the total exports in 2014-15, those of fused magnesia were 565 tonnes, non-calcined magnesite 123 tonnes, other magnesite 4,558 tonnes, magnesium oxide 1251 tonnes, 114 tonnes of dead-burnt magnesite and just one tonne of calcined magnesite. Exports of magnesium and scrap were 66 tonnes in 2014-15 as compared to 280 tonnes in the previous year. Its exports were mainly to Luxembourg (73%) (Tables - 10 to 17).

Imports

Imports of magnesite increased considerably to 102,077 tonnes in 2014-15 from 66,001 tonnes in the previous year. Imports were mainly from China (32%) followed by Australia (22%), Ireland (16%), Turkey (11%), Pakistan (9%) and Japan (3%). Out of total imports in 2014-15, those of fused magnesia were 5,993 tonnes, calcined magnesite 12,347 tonnes non-calcined 9,286 tonnes, dead-burnt magnesia 42,316 tonnes, other magnesite 13,448 tonnes and magnesium oxide 18,687 tonnes. Imports of magnesium and scrap increased to 19,271 tonnes in 2014-15 from 15,753 tonnes in the previous year. Imports were mainly from China (95%) (Tables - 18 to 25).

**Table – 10 : Exports of Magnesite : Total
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	6118	134702	6612	120898
UAE	1168	23044	1438	27087
Thailand	330	16683	520	11422
Malaysia	1465	8742	1592	10963
Singapore	281	9673	277	10163
Netherlands	425	6615	550	9920
Bangladesh	191	5249	543	7811
Pakistan	125	5079	140	6357
Saudi Arabia	5	152	303	5969
Chinese Taipei/Taiwan	20	564	68	2505
Germany	13	862	39	2396
Other countries	2095	58039	1142	26305

**Table – 11 : Exports of Magnesia (Fused)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	413	16075	565	22193
Singapore	169	6575	190	7410
Thailand	63	2252	187	7205
Pakistan	120	4877	80	3339
Chinese Taipei/Taiwan	-	-	56	2108
Brazil	2	67	26	1088
Argentina	-	-	20	833
Iran	4	167	4	170
China	24	780	++	13
Mozambique	-	-	2	26
Other countries	31	1357	++	1

**Table–12 : Exports of Magnesite (Non-Calcined)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	172	6437	123	5340
Germany	13	821	39	2232
Bangladesh	11	381	26	1349
Japan	40	921	40	1295
UAE	++	1	15	357
Saudi Arabia	-	-	1	78
Nepal	14	371	2	25
Myanmar	++	1	++	2
Brunei	-	-	++	1
Other countries	94	3941	++	1

**Table–13 : Exports of Magnesite (Calcined)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	9	455	1	48
UAE	-	-	1	36
Spain	-	-	++	12
Other countries	9	455	-	-

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**Table – 14 : Exports of Magnesite:
Dead-Burnt Magnesia
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	8	407	114	2923
Sudan	-	-	60	1393
UAE	-	-	32	1271
Chile	-	-	20	183
Malaysia	-	-	2	73
Norway	-	-	++	2
China	-	-	++	1
Other countries	8	407	-	-

**Table – 15 : Exports of Magnesium Oxide
(By Countries)**

Country	2013-14		2014-15(P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	2083	46279	1251	32690
Netherlands	425	6615	550	9920
UAE	167	4078	157	4780
Pakistan	++	2	60	2954
Singapore	109	2903	87	2753
Sri Lanka	42	1461	58	1923
Turkey	20	551	36	1409
Kuwait	78	1809	52	1400
Nepal	28	408	44	1340
Bangladesh	6	379	29	1134
Tanzania Rep.	-	-	25	839
Other countries	1208	28073	153	4238

**Table – 16 : Exports of Magnesite (Other)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	3457	58627	4558	57717
UAE	1001	18964	1233	20643
Malaysia	1465	8742	1590	10891
Saudi Arabia	-	-	300	5612
Bangladesh	174	4482	488	5328
Thailand	204	11206	333	4217
Oman	134	2605	110	2362
Nigeria	45	776	20	2121
Vietnam	-	-	149	1659
Ethiopia	2	55	154	1171
Sudan	60	1291	40	738
Other countries	372	10506	141	2975

**Table – 17 : Exports of Magnesium & Scrap
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	280	65276	66	30471
Luxembourg	89	23063	48	17219
USA	2	759	2	2600
Saudia Arabia	-	-	2	1960
Malaysia	7	2437	3	1689
Brazil	++	479	++	1142
Singapore	-	-	1	1134
Kenya	7	1967	5	1109
UAE	9	2117	++	1085
Indonesia	++	96	++	1001
Sri Lanka	3	97	1	473
Other countries	163	34261	4	1059

**Table – 18: Imports of Magnesite : Total
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	66001	2216905	102077	3327761
China	26844	702941	32350	855761
Australia	8857	364180	22258	827779
Ireland	6380	313914	16003	744862
Turkey	4591	131994	11692	316872
Japan	3764	227658	3399	197961
Israel	380	52258	413	57748
Netherlands	3033	146044	1188	52837
Pakistan	5459	35317	9217	46865
USA	765	54758	523	41175
Saudi Arabia	2896	45403	1751	40869
Other countries	3032	142438	3283	145032

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**Table – 19 : Imports of Magnesia (Fused)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	6429	263317	5993	245797
China	6200	254483	5590	235941
South Africa	200	7137	277	6750
Australia	26	1572	100	1571
Turkey	-	-	24	1092
USA	-	-	2	443
Other countries	3	125	-	-

**Table – 20 : Imports of Magnesite (Non Calcined)
(By Countries)**

Country	2013-14		2014-15	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	6630	55130	9286	48413
Pakistan	5457	35276	9215	46832
Greece	95	3394	30	814
Spain	172	5543	39	719
South Africa	-	-	2	46
Other countries	906	10917	-	2

**Table–21: Imports of Magnesite (Calcined)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	7097	198734	12347	458054
Ireland	1822	86423	6980	328268
Turkey	1	20	2250	60683
China	1103	14864	1463	32991
Saudi Arabia	2875	44345	935	18265
Australia	-	-	211	7883
Korea, Rep. of	-	-	288	4607
Iran	-	-	100	1469
Japan	7	610	13	1407
Netherlands	818	35731	25	1119
Spain	214	6153	27	738
Other countries	257	10588	55	624

**Table–22: Imports of Magnesite: Dead-Burnt
Magnesia
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	18182	619105	42316	1423690
Australia	7547	312718	21667	807436
Ireland	981	52989	4982	227033
China	7294	171796	8688	201224
Turkey	1500	43065	5875	149008
Netherlands	375	22994	305	17603
Greece	240	7684	260	8039
Germany	-	-	306	7364
Slovakia	102	2833	204	5463
Hong Kong	100	3419	25	458
Pakistan	-	-	2	33
Other countries	43	1607	2	29

**Table–23: Imports of Magnesite (Other)
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	14762	605706	13448	535630
Ireland	3577	174502	4041	189561
Japan	2833	126667	2426	99949
Turkey	3065	88065	2921	84935
China	1235	46698	2215	77785
Netherlands	1840	87285	858	34092
Greece	336	12195	546	19258
UK	7	1615	85	9120
South Africa	392	15011	118	6643
USA	21	3310	61	4076
Germany	12	636	82	4072
Other countries	1444	49722	95	6139

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**Table – 24 : Imports of Magnesium Oxide
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	12901	474313	18687	616177
China	10203	206018	14394	307821
Japan	902	99428	960	96605
USA	738	50310	460	36657
Israel	380	52258	413	57748
UK	207	20306	246	25194
Saudi Arabia	21	458	796	22125
Turkey	20	712	622	21154
Australia	51	10008	258	9858
Germany	60	6984	35	9569
Greece	115	7736	144	8755
Other countries	204	20095	359	20691

**Table – 25 : Imports of Magnesium & Scrap
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	15753	2793578	19271	3167018
China	15531	2701752	18600	3015102
Hong Kong	++	93	230	53016
Switzerland	30	18991	30	19934
USA	36	11994	72	19299
Austria	8	18030	4	8978
UK	8	12414	17	8382
Nigeria	34	3661	57	7098
Malaysia	9	962	46	6273
Korea, Rep. of	-	-	47	5522
Thailand	-	-	19	4185
Other countries	97	25681	149	19229

FUTURE OUTLOOK

Indian refractory industry, which accounts for about 90% of magnesite produced is experiencing range of challenges. Demand for refractories is promising with India's cement and steel industries growth.

India's refractory industry is set to continue its expansion, as the government has implemented a series of measures to give boost to infrastructure

development in the country. There is a need to explore and exploit magnesite for future demand. The consumption of magnesite in the organised sector has increased because of higher consumption reported by ferro alloys industry. The apparent domestic demand of magnesite is estimated at 6,22,000 tonnes by 2016-17 at 9% growth rate as per the report of the Sub Group, Planning Commission of India.